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and gene product, that increases an immune recognition gene, or gene and gene product, or gene and gene product comprising MHC class I and class II genes or gene and gene product[s], a peptide processing gene or gene product consisting of TAP-1, TAP-2, a proteosome subunit, Class II regulatory gene and gene product consisting of HLA-DM and invariant chain, costimulatory molecule gene or gene products consisting of B7 costimulatory molecule, PKR, IFN-beta, MAP kinase, NF-κB, JAK, and STATS wherein activation or postranslational modification of a gene product comprising MAP kinase, NF kappa B, JAK, and STATS, wherein activation is further involved in antigen presentation, growth, and function of the cell, and which increases the ability of a cell to present antigen to an immune cell.

2. (Amended once) The method of claim 1 wherein the gene or gene product is derived from the major histocompatibility complex (MHC).

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46. (Amended twice) A method of presenting antigen to the immune system of a mammal comprising;

(a) introducing double-stranded polynucleotide into a somatic mammalian cell with the enhanced ability to present antigen *ex vivo*, which improves the ability of the mammalian cell to present antigen; and

(b) measuring an increase in expression of a MHC molecule or a costimulatory molecule, or a MHC molecule and a costimulatory molecule involved in antigen presentation selected from the group consisting of TAP-1, TAP-2, a proteosome subunit, HLA-DM, invariant chain, CIITA, RFX5, B7 costimulatory molecule, PKR, IFN-beta, MAP Kinase, NF-κB, JAK, and STAT.

60. (Amended twice) A method for treating a mammalian disease which is sensitive to immunotherapy which comprises:

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(a) removing diseased cells from a mammal;

(b) introducing a sequence non-specific double-stranded polynucleotide greater than 25 nucleotides in length into the cells;

(c) treating the cells to prevent cell division [but] permit[s]ing other metabolic activity; and

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(d) immunizing the mammal with the an effective amount of the cells to prevent or alleviate the symptoms of the disease.

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62. (Amended twice) The method of claim 60 wherein the method of treatment is used to enhance another treatment method that enhances an immune response or an antigen presentation.

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74. (Amended twice) A method for increasing presentation of an antigen by a mammalian cell comprising:

(a) introducing a sequence non-specific double-stranded polynucleotide greater than 25 nucleotides in length into the mammalian cell *ex vivo*, which causes the cell to have an increased ability to present antigen;

(b) increasing the mammalian cell's ability to present antigen and forming an activated antigen presenting cell (APC); and

(c) measuring an increase in expression of an MHC molecule or a costimulatory molecule, or an MHC molecule and a costimulatory molecule involved in antigen presentation selected from the group consisting of TAP-1, TAP-2, a proteosome subunit, HLA-DM, invariant chain, CIITA, RFX5, B7 costimulatory molecule, PKR, IFN-beta, MAP Kinase, NF-κB, JAK, and STAT.

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76. (Amended once) A method for treating cancer with a vaccine, comprising a somatic mammalian cell with the enhanced ability to present antigen to the immune system comprising;

(a) introducing a sequence non-specific double-stranded polynucleotide greater than 25 nucleotides in length into the somatic mammalian cell *ex vivo*, which causes the cell to have an increased ability to present antigen;

(b) measuring an increase in expression of a MHC molecule[s] or a costimulatory molecule[s] involved in antigen presentation selected from the group consisting of TAP-1, TAP-2, a proteosome subunit, HLA-DM, invariant chain, CIITA, RFX5, B7 costimulatory molecule, PKR, IFN-beta, MAP Kinase, NF-κB, JAK, and a STAT; and

(c) preparing the mammalian cell for immunization.

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77. (Amended once) A method for treating cancer which is sensitive to immunotherapy which comprises:

- (a) removing a diseased cell from a mammal;
- (b) increasing or decreasing the expression of antigen by the cell; and
- (c) immunizing the mammal with an effective amount of the cell to prevent or alleviate the symptoms of the disease.

78. (Amended once) The method of Claim 77 wherein the method of treatment is used to enhance an other treatment method that enhance an immune response or an antigen presentation.

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80. (Amended once) The method of claim 76 wherein the treatment involves somatic cells and is coordinate with a treatment with CpG residues used to enhance immune cell responsiveness.

B. New Claims

Please add new claims 81 to 83.

81. (New) A method for treating a mammalian infectious disease which is associated with immunodeficiency which comprises;

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(a) introducing a sequence non-specific double-stranded polynucleotide greater than 25 nucleotides in length into the somatic mammalian cell *ex vivo*, which causes the cell to have an increased ability to present antigen;

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(b) measuring an increase in expression of MHC molecules or costimulatory molecules involved in antigen presentation selected from the group consisting of TAP-1, TAP-2, a proteasome subunit, HLA-DM, invariant chain, CIITA, RFX5, B7 costimulatory molecule, PKR, IFN-beta, MAP Kinase, NF-κB, JAK, and STAT; and

(c) preparing the mammalian cell for immunization.

82. (New) The method of Claim 80 wherein the disease is AIDS.